

2005 ANNUAL REPORT BRULE RIVER STATE FOREST

From the Superintendent

What value is there to an annual report? A great deal of time goes in to developing this report. For what purpose? I see this report as a useful tool to document the history of the forest, share the reasons and results of the work we do, and to tie the varied resource management goals together on the landscape.

I have above my desk a binder with annual reports from the 1930's to the 1960's. These are written in bureaucratic fashion, mostly numbers and facts. But even so there are stories that connect our management today to the past. They had to deal with frozen ground or snow as they planted in the spring. Interestingly, they also planted in the fall. They recognized the importance of managing recreation, and built campsites to discourage free-for-all camping. They too had their frustrations with old, broken down equipment. Beyond looking at those old annual reports for how-to advice I get a sense of the rich history of the Brule River State Forest and the value those people placed on the land. Land that is very different today than it was when they were serving it.

When the Brule River State forest was first established it was almost exclusively cut-over, burned over, failed farmland. I have pictures in my office of a naked landscape from Stony Hill to Hoodoo Lake, bare ground where the rail trestle crossed Little Joe Rapids and aerial photos that show this was typical across the area. The CCC-ers started the property on its way to recovery under the guidance of resource managers. They planted trees seemingly everywhere. They put out the fires. They provided habitat in the river. And it all laid the foundation for what we have today, a model of a healthy ecosystem

Here on the Brule River State Forest I believe that we provide a shining example of what happens when skilled managers work together to the benefit of the waters, soils, forests, and animals here. I look at those old photos and think "we've sure come a long long ways".

And how far can we go? Our masterplan lays out a vision of where we should go. We know from that plan that the public values a healthy Bois Brule River, boreal forest



on the clay plain, production of forest products and also barrens management on the sands, management for aesthetics or recreation in some areas, and so on. This annual report gives us all an opportunity to look back at the masterplan and compare it with our recent results and future plans to keep aligned.

I hope that as you read through this annual report you can see movement towards the goals of the masterplan, that you understand how much passion the resource managers have for the property, that you respect the history of the forest, and that you look to the future of the Brule River State Forest with as much optimism as I do.

The following reports will share the accomplishments of 2005 and the plans for 2006 and beyond as well as a number of summaries of research going on in or near the property. Comments on property operations are always welcomed at the state forest headquarters.

Highlights...

2005

- 655 acres in timber sales contracted for \$800,000
- 340 acres planted
- Boardwalk completed at Stone Chimney Rd Landing and trail built to link Bois Brule Campground to North Country Trail.
- 8,000 acres of reconnaissance updated
- Hilsenhoff Biotic Index shows good to excellent water quality on the Brule and its tributaries
- Wild Hogs found nearby

2006

- 600 acres timber sales planned to be sold from previously discussed sales.
- Trail work planned for Mays Ledges, Bayfield Rd. Trail, Stony Hill Trail.
- Invasive species inventory begins
- Increased use of prescribed fire planned
- Archery Club forming to support new archery course
- Emerald Ash Borer defense begins

Staffing

The state forest welcomed a few new faces to the staff in 2005. Justin Yarrington served as the property naturalist, spending time at the canoe landings and providing programs in the campgrounds and community. Frank Maragi and Paul Hlina were hired to expedite forest reconnaissance updating. Frank is currently working on his MS in Biology at UMD and Paul is completing a masters in Library Science at UW-Superior. They provide much valuable insight and experience. Chris Sutherland continues to work on updating recon and setting up timber sales during breaks from UW-Stevens Point where he is studying forestry. Kevin Feind, Ed Culhane and Gerry Danielson continue as rangers. Kurt Janko continues to assist Forester Dave Schulz with forestry work as well as doing property maintenance and development. John Bronson is primarily a DNR pilot working out of the Siren airport but on days he's not scheduled to fly he does ranger patrol on the forest. Tom Salzman was the Lake Superior Area Forester in 2005 and retired in early 2006. Steve Petersen is the property superintendent.



From left to right: Tom Salzman, Dave Schulz, Cathy Khalar, Ed Culhane, Kurt Janko, Kevin Feind, Josh McIntyre, Steve Petersen.

Development and Maintenance

In July a 650 foot boardwalk was constructed on top of the sunken cordwalk that leads to the Stone Chimney Canoe Landing. Kurt Janko, Chris Sutherland, and Steve Petersen from the state forest got help from Kara Kent, Jason Lieftring, and Michael Vorass, biology students at UW-Superior. The material needed to be hand carried a significant distance from the parking lot.

After the boardwalk was completed Justin Yarrington placed two interpretive markers along it explaining the geology of the Brule Bog. Justin also completed a project to place interpretive markers along the Stony Hill Nature Trail. These panels explore the unique history of the Brule valley, including the early

explorers, Native Americans, early settlers, geologic history, and the role of forest management in restoring the landscape.

The storage garage at the ski trail was completed in the fall of 2005. There were a few finishing touches like trim and lights that were installed and now the building is fully functional. It is used to store the grooming equipment and provides a place to work on the equipment when it breaks down.

Though it was noted in the 2004 Annual Report the remodeling of the ski hut was actually done in 2005. The building had been a combined garage for snowmobiles and warming house. When the equipment got moved into the new storage garage the warming house was gutted to the studs and rafters, insulated, and paneled with knotty pine. Nice windows and improved heat were installed. Prior to the 2005 ski season the floor was covered with a product called Dri-Dek that lets snow fall through so the floor stays dry. The Afterhours warming house is now the envy of ski areas far and wide.

Following approval of the masterplan variance a 29 target archery range was installed on the entry loops of the Afterhours Trails. Excelsior bales are used for backstops and they are placed on top of wooden stands. A sand bunker backstop was placed behind the warming house for use with broadhead tipped arrows. This course is closed to archery during the ski season.

A trail connecting the Stony Hill Nature Trail to the North Country National Scenic Trail, described in the masterplan on page 83, was opened in 2005. The trail was mowed in with a tracked mower on loan from Wildlife Management, and boy scouts from Lake Nebagamon helped clear the tread. Chris Sutherland routed signs for both ends.

In 2006 there will be several projects completed in the office including replacement of the phone system and new carpet and paint.

The Brule DNR station serves as an emergency dispatch center for wildland firefighters across northwest Wisconsin and it's not uncommon for high winds to knock out power and start fires at the same time. A natural gas fueled standby generator will be installed to serve the office when power goes out and the overhead electric service between buildings will be replaced and put underground. Electric service will be extended to a host site in Bois Brule Campground for the exclusive use of a host (master plan page 83).

During the summer of 2006 a trail crew will be hired to start a number of trail projects that have been funded, including building a boardwalk to Mays Ledges, renovation of the Bayfield Road Hiking Trail and the Stony Hill Nature Trail, Renovation of the trail to the river from Copper Range Campground and replacement of that canoe landing, and erosion control work on angler trails along the river on state land (master plan page 78). Work on these projects will continue over the next several years.

Pending zoning approval and permitting the old pit toilets at the Highway 13 canoe landing will be replaced with a single building just like the one at the Highway 2 canoe landing (masterplan page 78). This pre-cast concrete building is functional, attractive (for a pit toilet), and is installed in only a couple days.

Time permitting the snowmobile overlook of the Brule Valley described on page 102 of the masterplan would be built. In cooperation with the Wausau Paper Company and the Brule Valley Snowmobile Club, a trail may be constructed across Wausau Paper Company land east of Riflerange Rd. This would replace trail south of Jersett Road and eliminate several road crossings. Other trail grading on the snowmobile trail may be completed as time permits.

Also planned for the Riflerange Road area is to remove a perched culvert on the woods road a mile or so north of the end of Riflerange Rd. Currently there is a locked gate at this spot. The gate and culvert would be removed and a berm would be placed to close the road.

Two cleanup projects are planned for the property. The first is to remove concrete footings, some old wooden structures, and asphalt at the former Gordon Nursery site. The second is to cleanup the site of a former dump on Brule River Road. Engineers will visit the site in the spring and arrange for the cleanup to proceed.

Equipment

2005 brought the end of an era to the Brule River State Forest. Ranger Kevin Feind's Ford Ranger pick-up, ol' number 8756, was sent to auction. This tired old truck was replaced with a 1997, full size truck better suited to law enforcement and patrol purposes.

Historically state owned trucks were replaced around 90,000 miles. Recently policy has been to keep them considerably longer. The

truck Ranger Feind is currently driving has nearly 160,000 miles and the other law enforcement equipped vehicle on the property, a 2000 Ford Explorer, has over 100,000 miles. There has been a dramatic increase in the cost to maintain these vehicles in appropriate condition for law enforcement duty. It is hoped that both these vehicles will be replaced with new in 2006.

The 1985 Tucker Sno-Cat used to groom the ski trails had a very tough 2004-5 ski season. The engine, clutch, a drive sprocket, the hydraulic pump pulley, and several idler wheels were all replaced. It currently has around 1,600 hours on it but a Tucker's life is a tough life. During 2006 preventative maintenance will be done to replace bearings, sprockets, and possibly tracks. The machine is important as it can do deep renovation of snow that simply can't be done with snowmobiles. Because of that it is a big part of the success of the ski trail. Given current budgets and the cost of replacement there is no realistic hope to replace it any time soon.

The 2004-5 ski season was also hard on the rest of the grooming machines. The 1994 Ski Doo Alpine required a major engine rebuild. The 1997 and 2002 Ski Doo Skandiks also had their share of mechanical problems, including a transmission breakdown. In the fall of 2005 the Skandiks were traded-in for two 2006 Arctic Cat Bearcat 660 snowmobiles. The new Arctic Cats are four stroke and liquid cooled. They pollute far less, are quieter, and use dramatically less fuel. There were some early problems getting them clutched correctly to pull the groomers but they are functioning very well now.



2006 Arctic Cat Bearcat

Wildlife Management Activities

Wildlife Biologist Greg Kessler

Habitat Work

Two prescribed burns totaling 70 acres were conducted in spring 2005 with a cooperative effort of forestry-fire control staff, BRSF personnel, and wildlife management. The fields at the end of Loveland Roads (a.k.a. Barrier road) and the Brule River road were burned on April 29, 2005. Four miles of fire break were mowed in preparation for spring burns in 2006. An ASV (all-season-vehicle) was used again to aid in mowing of hunter walking trails, fire breaks, wildlife openings, and grasslands. The ASV allows mowing during wetter weather conditions and rougher terrain than is acceptable with a tractor mounted brush mower. A tractor mounted mower was used to mow the fallow fields at Fasteland and the Duckponds.

Dike maintenance consisted of hand brushing and mowing at Fasteland, Koski, Leppala, Duckponds, and the Barrier ponds.

Surveys

Furbearer tracking surveys along Clevedon Road indicate continued decline of fisher, which appears to be a natural phenomena occurring regionally. It is typical after re-introduction of an extirpated species that they exceed their long-term carry capacity for a short period before they settle into a lower population level that is supported by their food and habitat. There was also a notable lack of weasels this year.

Wolf monitoring surveys in 2005 have found evidence of 5 or 6 packs with 22 or more wolves using portions of the state forest. Traditional territories occupied this year are:

Shoberg Lake pack (5+) and Casey Creek pack (4), Moreland Lake pack (5+), and Orienta pack (3). Numerous tracks and reports continue to indicate additional wolves may be present north of Hwy 13 west of the Brule River, but it is uncertain if this is a new pack. A local farmer captured a young female wolf while trapping coyotes south of Lake Nebagamon. She was fitted with a radio collar and we found that her pack is occupying an area formerly know as the Lake Nebagamon pack that had dissolved after several members were

euthanized when they began killing livestock. There are 5 wolves present in this re-formed pack.

A shorebird survey was conducted by volunteers this year. The observers identified a Virginia rail for only the second time in the 8 years that this survey has been run. They dubbed the nickname of "pig-bird" for this rail as its call is similar to the soft grunts of a barn-yard pig.

The Clevedon road sharp-tailed grouse dancing ground, called a lek, had six males displaying in 2005, up from 5 in 2004 and only 3 in 2003. Motts Ravine State Natural Area as well as the hail damage area near Stone Chimney and Turkey Farm roads continue to show sign of sharp-tails but no leks have been found.

Deer populations within the Brule area remained relatively high this past year but the very good antlerless harvest helped to trim the herd. Another herd control season (T-zone) is being proposed for 2006 to continue the downward trend.

Planned Activities for 2005

Habitat work will include five prescribed burns totaling 214 acres and maintaining dikes (masterplan page 62). Prescribed burns include: Goose refuge (45 acres), former FmHA parcel (80 acres), Cloverland Community Center (50 acres), Koski fields (21 acres), and Fasteland (12 acres). Dike maintenance will be done at Koski, Goose Refuge, and the Barrier ponds, as time and funds permits.

Survey work will continue to include monitoring wolves, sharp-tailed grouse, marsh birds, anurans, eagle-osprey, and furbearers.



Real Estate

3 parcels were acquired for the Brule River State Forest in 2005

- 15 acres from Culhane in sec. 11, 48-10
- 40 acres from Heinrich in sec. 23, 48-10
- 60 acres from Illi in sec. 13, 46-10

Land is only purchased from willing sellers. When a party shows an interest in selling their land an appraisal from a third party appraiser, contracted by the Department, is arranged. This appraisal considers the recent sale prices of comparable property and other factors like timber, location, and access to arrive at a fair market value and that amount becomes the state's offer.

Funding to purchase land is from the Stewardship Account, a state bonding program established to acquire land for conservation and recreation. This program has allowed the state to buy significant parcels of land like the Chippewa, Willow, and Rainbow Flowages, the "Great Addition" lands in northcentral Wisconsin, and recently the Peshtigo River State Forest and Thompson State Park.

A large part of the payment of Stewardship bonds and Payments in Lieu of Taxes is from the Forestry Account. The Forestry Account is funded by state forest timber sales, state forest recreation revenue, and a state property tax of 20 cents per \$1,000 of valuation.

Does the DNR Pay Taxes?

Each year, the DNR makes a payment to all municipalities where there is land in DNR ownership. This is called payments in lieu of taxes, or PILT for short. The dollar amount the DNR sends to each municipality is dependent upon the number of acres of land the DNR owns and the time of acquisition.

Under Statute 70.113, a payment is made directly to a municipality (City, Town, or Village) and retained. Under Statute 70.114, a payment is sent to a municipality, and then these funds are to be distributed to its corresponding taxing jurisdiction, such as a School District, Vocational School, County, State, or other Special Districts.

Two different types of payment are made under Section 70.113. On land acquired by the Department before July 1, 1969, the Department pays municipalities 88 cents per acre for lands owned in fee title and for lands leased from the federal government. On land acquired by the Department after July 1, 1969 and prior to January 1, 1992, the payment is based on the

local assessment of the following January 1, multiplied by the county, local, and school tax rates for the year. Therefore, the first year payment is equal to the full property tax that would have been paid had the property remained on the tax roll. The Statute directs that the amount be decreased at the rate of 10 percent per year after the initial payment. In the tenth year, and every year thereafter, a payment of 10 percent of the first year's payment will be made but will never be less than 50 cents per acre.

Under Wisconsin statute 70.114 for new land purchases the Department of Natural Resources pays aids-in-lieu-of-taxes equal to property taxes that would have been paid had the land remained in private ownership. The effective date of this program was January 1, 1992. The first payment was made in January 1994 for the 1993 tax year. According to State Statute 70.11 (1), property acquired by DNR comes off the tax roll. In lieu of the loss of tax base, each taxing jurisdiction receives an aid payment equivalent to property taxes.

The only difference between the new DNR aid-in-lieu-of-tax program and private land relates to assessed value. To avoid the need for local assessors to continually assess DNR property and for the DNR to review and possibly appeal assessments, the initial assessed value is set at the DNR purchase price of the property, which is based on appraised fair market value. Subsequently, this value is adjusted to reflect the change in the assessed value of land in the taxation district. The first year payment is actually based on an adjusted purchase price. All other aspects of the way DNR pays aid-in-lieu-of-tax under this new program are the same as those for a local taxpayer.

The program works like this - In the year of purchase (e.g., 1997), regular property taxes are paid as determined in the closing transaction. The seller pays a prorated share, and DNR pays the balance. For the following year (i.e., 1998), the assessed value of the property is the purchase price as determined by certified appraisals. In cases where the acquisition is at other than market value, such as donation, the assessed fair market value for the year preceding the purchase is used.

The Department adjusts the purchase price to reflect the change in the assessed value of all land in the taxation district. The adjustment rate is supplied by the State Department of Revenue. The adjustment factor is used to calculate a current "assessed value." In addition, the

adjusted "assessed value" is equalized. The equalization rate is provided by the Department of Revenue. The "equalized assessed value" is then used to calculate the aid payment.

In December (i.e., 1998), the Department gathers the general property tax rates for the current year (i.e., 1998) for all taxing jurisdictions from the taxation district clerk. On or before January 31 of the next year (i.e., 1999), DNR calculates and pays the taxation district treasurer the aid-in-lieu-of-tax payment. The amount calculated by multiplying the equalized, adjusted "assessed value" by the appropriate tax rates. On or before February 15 (i.e., 1999), the taxation district treasurer pays each taxing jurisdiction (town, village, or city; school; VTAE; County; State of Wis.; and special districts) its appropriate share of the aid payment.

Under two previous aid-in-lieu-of-tax programs (70.113 ss), land acquired by DNR went off the tax roll, and DNR made an aid-in-lieu-of-tax payment to only the town, village, or city taxation district at discounted rates. (The school, VTAE, and county jurisdictions did not receive an aid payment). However, the loss of tax base triggered increases in other state aids to offset possible tax losses. While these aid programs prevented adverse tax impacts, it was difficult for local taxpayers to believe the system worked. Consequently, many taxpayers thought DNR acquisitions made their property taxes higher. The new program treats DNR just like tax-paying property owners.

This process means that DNR pays a fair share of aid on all lands purchased since January 1, 1992. There is no loss of property tax revenue in the taxation district due to DNR ownership. In fact, because the purchase price is often higher than equalized assessed value, the DNR payment is often greater. When payments in lieu of taxes are compared with revenue received from Managed Forest Law or Forest Crop Law enrolled lands the difference is greater still.

Brule River State Forest PILT Payments

	70.113 PILT	70.114 PILT
Bennet	\$2,106.73	\$2,645.67
Brule	\$11,124.81	\$6,845.50
Cloverland	\$4,937.94	\$12,744.52
Gordon	\$608.47	\$624.96
Highland	\$9,446.51	none
Solon Springs	<u>\$5,038.76</u>	<u>\$7,346.57</u>
	\$33,376.22	\$30,322.22

Master Plan Update

The variance to construct an Archery Course on the Afterhours Ski Trails was approved in 2005. This variance proposal was reviewed at the April, 2005 Public Meeting. The following language will be added to the Recreation Management Prescriptions for Area 6 on page 89 of the 2003 master plan.

Working with partner groups construct and operate an archery course on the entry/return loop (approximately .5 miles in length) of the Afterhours Ski Trail. The course shall be constructed to not conflict with skiing or hiking uses and to have minimal visual impact on trail users. Further, course shall be closed to archery during the ski season and the targets removed.

The course was constructed during the fall of 2005 and an archery club is forming. Details on the club may be found at www.brulearcheryclub.com. The course saw significant use through the fall, with over 20 people attending an open house in mid September.

Forest Management

Dave Schulz - Forester

Spring is typically the busiest time of the year for forest management activities here on the Brule River State Forest, and 2005 was no exception. The tree planting crew arrived to a fresh spring snowfall and cold weather. 240,000 trees were planted on 340 acres during a week when it snowed every day, except for the last day when it was 16 degrees and ground was frozen to the point the planting tools would not penetrate the ground. Once the ground thawed, the trees got planted and the crew was on its way to their next planting job.



The tree planting crew

Once the weight limits are placed on local town and county roads, logging activity shifts to jack pine and red pine sales in the sandy soils located on the eastern portion of the forest. During the spring and early summer of 2005, 5 sales were active resulting in the harvesting of over 6,000 cords for a stumpage value of over \$300,000.

Management of grasslands using prescribed fire was completed on 2 areas totaling 70 acres. A small area on the shores of Rush Lake was burned as well. The site at Rush Lake was burned to control the spread of spotted knapweed, an exotic weed species that is found along most road edges in the area. Follow up burning and further treatments will be conducted during 2006.

As spring turned into summer, preparations for another planned burn began with the construction of over 2 miles of drivable fuel breaks surrounding a harvested timber sale that will be burned to encourage jack pine regeneration. We were unable to complete this burn during 2005 as weather conditions were never “right” for the desired effects of the burn. This burn is planned to be completed sometime in late spring of 2006.

New aerial photos were flown and purchased, which improve our ability to update our records and plan forest management activities. These photos are color infrared, which with a trained eye, one can see small differences in forest cover types.

Much time was spent during the summer months both assessing the effects of the jack pine budworm outbreak and setting up timber sales in response to it. With the help of Chris Sutherland and Kurt Janko, 655 acres of jack pine timber sales were established. These sales sold an estimated 14,315 cords in a fall bid opening which equates to over \$800,000 in income to the state forestry fund.

Scarification treatments were completed on a significant acreage (approximately 80 acres) of jack pine. These treatments are done with DNR fire control dozers and operators to expose at least 50% of the mineral soil in jack pine stands before harvesting the mature jack pine. The mature jack pines are then harvested, the summer temps force the cones to open, and seeds from the harvested trees are able to fall on the exposed dirt, which is the ideal seedbed for germination.

Plans were made for spring of 2006 tree planting by assessing previous year’s seedling survival rates. After several years of poor initial survival following the planting, the trees planted in 2005 fared well over their first growing season. Plans are to re-plant 63,000 trees on 158 acres in the spring of 2006. If we receive ample rainfall in 2006, the tree planting effort in the hail damaged area could be completed in 2006. Since 2002, over one million seedlings have been planted on the 723 acres of planting sites within the hail damaged area.



Overall, the hail damaged area is recovering well in areas that were treated with timber sales and other management activities. The jack pine is regenerating quite well, the aspen sprouts are growing vigorously, and the pine plantations have been replanted.

During 2005 I became involved with a long term botanical study in cooperation with Dr. Donald Davidson from UW Superior. Dr. Davidson studied areas of the Brule River Watershed in 1968 to determine relative dominance of tree species on 55 sites within the Brule watershed. Between then and now, the data had never been published or looked into further. Recently, the project has been re-opened and the same areas will once again be looked at to determine relative dominance as compared to 1968. Paul Hlina from UWS is heading up this work during his spare time between doing recon work on the BRSF as well as running his own shoreland restoration business. Recently, Dr. Davidson became ill and is unable to teach his forestry class at UWS. Paul Hlina is stepping in to lead the teaching effort and I am assisting with setting up and leading field visits for the students.

We depend upon quality data to make management decisions here on the BRSF. This is why forest reconnaissance updating continues to be a major work activity. Over the last 3 years, we started at Lake Superior and headed south. Right now we are working in the forest near Hwy FF. Ed Culhane, Kurt Janko, Paul Hlina, Chris Sutherland, Area Forester Tom Salzmann, and I have each spent many days afield, with just as much time in the office “crunching” data to accomplish what has been done to this point. It is a much needed effort as the forest is constantly changing and the maps and data never change unless we put forth the effort to change them. This is the first effort at really updating large areas of the forest recon program since the data has been computerized. This effort is “cleaning up” many errors in the data that were due to the switchover from paper data to computerized mapping systems.

Plans for 2006 include prescribed burning on 5 grassland sites, 2 jack pine sites, and Rush Lake (master plan page 62 and 93). This will likely be the highest number and acres of prescribed burns that have ever been conducted here on the BRSF. We will set up around 600 acres of timber sales in primarily red pine plantations. These are sales which have been presented at previous public meetings.

This is the year to “catch up” on the sales that have been talked about in prior meetings and start with a fresh slate in 2007. Planting plans are small this year, with just over 60,000 trees to replant sites where the last few years of planting have failed. Updating forest recon will once again be a large part of the workload, which will continue on for years to come (master plan page 61).



Interpretation

“Interpretation” is more than “nature programs”. It is the art of making environmental education relevant and revealing meaning to natural systems. Freeman Tilden, a writer, teacher and philosopher described it this way – Interpretation is...“an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information.”

The goals of the Brule River State Forest’s interpretive program over the last four seasons has been to teach visitors about the plants, animals, history and ecology of the property but to do more than simply inform. One goal has been to make connections between the visitor and the property, to have them understand why this is an important place and how they can play a role in protecting it. Another goal has been to help people understand the complex processes that go on in the forest and waters.

As an example, the naturalists that work at the canoe landings try to connect with visitors

by welcoming them to the state forest, raising awareness that this is more than a ride at Disney. Then they attempt to engage visitors by mentioning something interesting they may find along the river. Once people buy into the idea this is a natural experience they are open to more messages about why the Brule is so unique and why they should help keep it clean, quiet, and safe.

Not all groups respond favorably to this approach so the naturalists are also prepared for a “just the facts” talk about the rules of the river and expectations of visitor’s behavior. Sometimes even this doesn’t work. See the Ranger Report elsewhere in this document. But over the years there has been a dramatic improvement in behavior on the river thanks to the efforts of the naturalists that staff the landings.

In 2005 the Naturalist was Justin Yarrington and Cathy Khalar assisted at the Stones Bridge Canoe Landing. In addition to his work at the canoe landings Justin presented programs in the campgrounds. He also developed interpretive signs for the Stone Chimney Canoe Landing boardwalk and the Stony Hill Nature Trail. Tony DePerry also offered a couple programs in the Bois Brule Picnic Area on Ojibwe storytelling.

For 2006 Josh McIntyre returns as the property naturalist after spending 2005 in Vermont working for their DNR. Emphasis will once again be placed on the canoe landings and campgrounds. A new challenge for 2005 will be informing campers about the threat of emerald ash borers and the impact this bug could have on the forest.

Ranger Report

In 2006 the Rangers were once again Kevin Feind, Ed Culhane, Gerry Danielson, and John Bronson. Gerry Danielson was off for much of the summer due to illness. The focus of their efforts was to provide for visitor safety first followed by protection of the resource.

With the availability of John Bronson, normally a pilot for DNR but working at Brule about a day a week, snowmobile patrols were increased and favorable comments were received from trail users. One of the property’s new snowmobiles is equipped with emergency lights and snowmobile patrols will take a higher profile in 2006-7.

The 2005 steelhead season opener car count was 266, which is the average over the last

20 years. Good numbers of steelhead were in the river. The brown run was down again in 2005 due in large part to the floods in the spring of 2001 and 2002 as well as increased predation in Lake Superior.

Because of concerns that high numbers of brook trout were being kept by anglers in the upper river, Ranger Feind made an effort to check anglers at Wheaton’s, and Stone’s Bridge throughout the Spring and Summer. After multiple angler contacts, very few brook trout were seen being kept by anglers.

For 2005 the landing hosts worked mostly at Stone’s Bridge, Winnebougou, and Pine Tree, depending on where the most traffic would be based on the day’s reservations provided by Brule Canoe Rental. Direct contact with canoeists and kayakers prior to their river trip continues to work well to encourage good behavior. Rather than hire a second landing host, Cathy Khalar worked overtime on the busiest weekends. This seemed to work well as she is very familiar with the education program we’ve implemented over the last several years. Justin Yarrington was the naturalist for the summer and worked mostly at the canoe landings and in the campgrounds.

There were several issues that developed with camps running trips on the river in 2005. In particular, one camp spent the night along the river and several youth group’s had participants injured. In late July a letter was sent by the superintendent to all the camps that use the river reminding them to make safety a priority, to provide adequate supervision, and to plan enough time for their trips. This will be watched closely again in 2006.

The numbers of bear hunters was down in 2005. Fewer tags were available for this area. Grouse numbers were low so there were fewer grouse hunters as well.

Several interesting cases were handled in 2005. An individual was found to be in possession of methamphetamines when they fled the ranger station parking lot after trying to register for a remote camping permit without any backpacking equipment. When Ranger Feind asked a couple questions about their plans the person got real nervous and fled, leaving their girlfriend behind.

Forester Dave Schulz was examining a stand of jackpine considered for harvest when he found a suspicious vehicle. Further investigation discovered a man camping well back in the woods. He had been there for

several days and intended to spend a lot of time. The man had no permanent address. He was temporarily relocated to 1313 Belknap St. in Superior.

Late one night a woman crashed her car into the ditch of Hilltop Rd. as she approached Ranger Feind from the opposite direction. She was found to be dragging a fairly large tree from the undercarriage of her car. She was charged with operating while intoxicated.

The numbers:

- 5,000 informational and educational contacts by the rangers
- 3,300 law enforcement related contacts
- 321 verbal warnings
- 11 written warnings
- 41 citations
- 3 arrests

Emerald Ash Borer and other pests threaten, Leave the firewood at home to help keep Wisconsin's parks and forests healthy

For many people, a campfire is an important part of the camping experience. It's the family room of the campsite; a place where friends get together to share a laugh, cook meals, and toast marshmallows. Telling ghost stories by firelight and tales about "the one that got away" are camping rituals.

But the firewood that fuels your campfire could also be transporting non-native insects and diseases that can cause problems for the forested areas in Wisconsin, including your favorite campground. Foreign pests and diseases like the gypsy moth and oak wilt – and two new threats to our forests, beech bark disease and the emerald ash borer – are easily spread when these insects and fungi reside in pieces of firewood. Firewood that is less than a year old and still has tight bark is especially risky as insects and other organisms can still be living in the wood even after it's been cut and split.

"It's not uncommon to see campers bring along a pickup load of firewood from home, especially if they're camping all weekend or longer," said Jane Cummings-Carlson, forest health expert with the Wisconsin Department of Natural Resources. "These firewood hitchhikers are a big concern to us because we have so many people visiting our parks and forests, from all around Wisconsin and from across the U.S. and

Canada. Some of that wood might just be the source of our next big problem."

But firewood doesn't have to travel across state lines in order to raise concern. For example, pieces taken from a person's year-round home in Waukesha County to their summer place on the Bois Brule River could result in a new infestation of gypsy moth on the western edge of the state.

Across Wisconsin, campers are encouraged to take some simple steps to help ensure the healthy future of the state's parks and forests:

1. Campers from out of state will not be permitted to bring firewood from home into state owned campgrounds this year.
2. Leave firewood at home and purchase aged firewood near your campsite location. Many properties offer firewood for sale or private sellers will have it available just outside the park. This is especially important for any campers from southern Michigan where the emerald ash borer is already established.
3. Only residents from Wisconsin can bring firewood from home this year. If you do bring your own firewood, make sure you burn all that you bring – or take leftovers home with you. Even though it may be a nice gesture for another camper, don't leave any behind. It may never get burned and pest could emerge from the unburned wood. Next year, no one will be allowed to bring firewood from home to a state campground.
4. When buying firewood or bringing your own, make sure you select pieces that are dry and have either no bark or bark that is loose (a sign that the wood is very dry). Not only will this reduce the threat of spreading diseases, your fire will be easier to start.
5. Reduce your need for open fire by cooking over gas or charcoal. Instead of an evening campfire, explore new night-time activities like star-gazing or viewing wildlife by flashlight.

Campfires will remain an important part of the outdoor experience in Wisconsin. We must all take a few precautions in order to keep our forested areas and campgrounds – and our city parks and yards – free from disease.

In Wisconsin, the gypsy moth has become firmly established in the eastern half of the state and quarantines prohibit the movement of wood products out of 41 counties where the moth is a problem. Oak wilt has spread

throughout the southern two-thirds of the state, except the Door County peninsula. It has not yet shown up in Michigan. Beech bark disease and the emerald ash borer are problems in Michigan and the Upper Peninsula and have yet to be detected in Wisconsin.

"The emerald ash borer is the next big forest pest threatening Wisconsin," said Cummings-Carlson. "It's well established in the Detroit area and has already killed more than 15 million trees in southern Michigan and in nearby communities in Indiana, Ohio and Canada. It was also recently discovered at Brimley State Park in Michigan's Upper Peninsula. Scientists firmly believe it was transported there in firewood.

The emerald ash borer is not an insect that is native to the U.S. It belongs to a group of insects known as metallic wood-boring beetles and infested ash trees typically die within three to five years.

Brule Dispatch Group Fire Season

The Brule Ranger Station continues as a dispatch center for organized DNR wildfire suppression activities across the four county area of Ashland, Iron, Bayfield, and Douglas counties. The 2005 fire season was again well below the long term averages for numbers of fires as well as for acres burned. During 2005, 71 wildfires burned slightly over 26 acres. This compares to the long term average of 105 fires burning 334 acres. There were no reported wildfires on the Brule River State Forest during 2005.

Weather conditions ranged from a high of 97 degrees on Aug. 9 to a low temp of -27 degrees on Feb. 18. Total snowfall for 05-06 has been measured at 94.5 inches with a peak snow depth reaching 21 inches on Feb. 25. Even though it hasn't seemed like a big snow year at Brule, we are still 26 inches above the long term average of 68 inches of snow in a normal season.

Some notable weather observations for the year include:

- A 25 day stretch in late June through July when we received a total of .02 inches of rain.
- A two day rain of almost 7.5 inches on Oct 4-5 which pushed the Brule River to near flood levels.

- Final snow melt in the spring occurred on April 10, 2005 with the first measurable snow falling on Nov. 17, 2005 giving us over 7 months of snow free conditions.
- January 2006 was the warmest January on record. Most notable was not the daytime high temperatures, but the night time lows which were the highest ever.
- During the 2005 -2006 winter, there was not a day that remained below zero for a daytime high temp.

North County Trail

David Zosel – NCTA Chapter President

With the completion of the Samples Road parking area and kiosk, replacement of the kiosk at the Gaylord Nelson Trailhead, and the construction of a bridge across Jersett Creek, the 24 mile-long section of the North Country National Scenic Trail from the Bayfield County Line to St.Croix Lake on the southern fringe of the Forest is complete.

The final approximately 1 1/2 miles of trail construction in the BRSF will be the westward section of trail through the Brule Bog Natural Area. Permits from DNR Wetlands and Natural Areas and US Corps of Engineers for trail location and design, including a bridge across St. Croix Creek were approved early this winter. Trail construction will take place only during either the winter or summer, but not in the more vulnerable spring and fall seasons. Annual bird surveys and exotic plant surveys are conditions of the approval. Grants have been requested for construction material costs. BRSF is contributing a number of old telephone poles which will be used for boardwalk supports in boggy areas. In the last 1/2 mile west of the bog, scouting for relocation has been necessary due to creation of a large gravel pit on private property on the original planned route.

Much volunteer labor will be necessary to complete the boardwalk. We appreciate the cooperation and assistance we receive from the BRSF. We believe the BRSF section will be one of the finest single track premier hiking trails anywhere!

2005 Brule River Hatchery Report

Gervase M. Thompson – Hatchery Technician

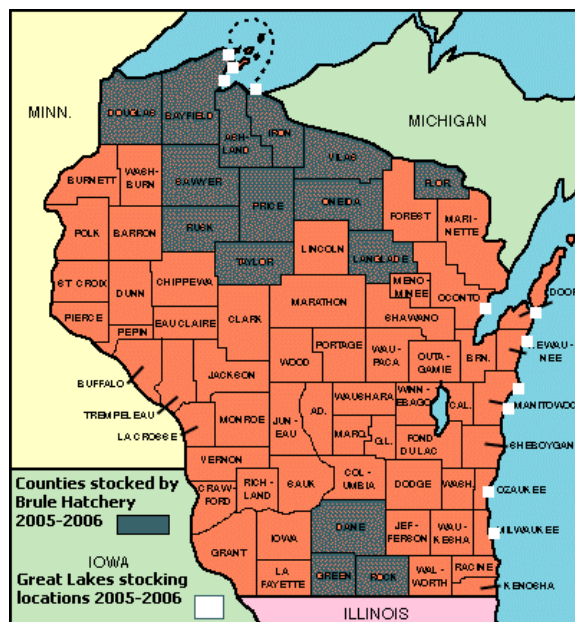
The Brule River Trout Rearing Station was built in 1927. The water supply for the rearing station is the entire flow of the Little Brule River. We receive 2400 gpm of water flow throughout the facility. We raise three domestic and one feral species of trout at Brule. St. Croix brook and brown trout, Erwin rainbow trout, and Seeforellen brown trout. All domestic fish are transferred in as small fingerlings in early June from the St. Croix Falls and Osceola State Fish Hatcheries. The Seeforellen brown trout arrive in early July from the Bayfield State Fish Hatchery. We stock lakes, rivers and streams in 12 counties in northern Wisconsin. This year we will be shipping fish to three South Central region counties. We are also stocking parts of Lake Superior and Lake Michigan (Figure 1). Our large fingerling trout stocking occurred in October 2005. We stocked 19,975 Brook trout, 31,312 Brown trout, 70,324 Seeforellen brown trout, and 16,715 Rainbow trout. Our yearling trout stocking will occur this spring. We will be stocking approximately 26,450 Brook trout, 107,775 Brown trout, 80,000 Seeforellen brown trout, and 36,330 Rainbow trout.

Over the last several years the nature center in the old hatchery office was a big hit with tourists. We had 2,210 visitors from 26 states and three countries (Spain, Australia, and Canada) sign our guest book from July 2004 to June 2005. We provide informal tours of the hatchery to visitors, and formal tours to many school groups and summer camps. Many tourists visit our facility after hours during the summer. These visitors are not signed in the guest book and therefore are not counted.

Fisheries Management Activities

Dennis Pratt – Lake Superior Tributaries Fish Biologist

In 2005 fisheries personnel were again able to work on a cooperative trout habitat project with the Brule River Sportsmen's Club. On Saturday, July 23rd thirty-nine volunteers placed thirty yards of spawning gravel in the Cedar Island Bridge stretch of the river (See photo below). Thanks go to the Cedar Island Conservancy Inc. families and staff who were once again gracious hosts for the activity and a special thanks to Jody Swanson for volunteering his time operating the front end loader for the



project. The gravel was donated by Tom Kolodziej of Iron River Sand and Gravel and Cedar Island Inc. donated the use of a tractor/loader. Gravel was loaded off of the bridge and placed in gravel boats for club members to float upstream to the spawning site. Fisheries staff also completed habitat improvement work on a Bois Brule tributary feeder, Cutler creek, during the 2005 field season. A very important part of the Cutler Creek project was replacement of the Castle Road culvert which previously blocked brook trout passage to spawning areas upstream of the road crossing. The town of Brule contracted this culvert replacement work funded jointly by Douglas County Land Conservation Department and the U.S. Fish and Wildlife Service. Brook trout successfully passed upstream and spawned this last fall. This tributary is an important brook trout spawning area for the Winnebougou/Gitchee Gumees Clubs' portion of the river.

Fisheries staff monitored both the spring and fall trout and salmon runs at the Sea Lamprey Barrier (run enumeration is included in this report) and partnered with United States Fish and Wildlife Service personnel to capture and remove a record number of lampreys at the barrier. Trout and salmon spawning activity at habitat improvement sites were monitored and maintenance work was done at a number of the historic habitat improvement sites.

Fisheries staff will continue salmonid monitoring and habitat improvement work in 2006 (See habitat improvement map below for

locations of improvements accomplished in the last decade).



Habitat project near Cedar Island

Nonnative, Invasive Plant Inventory on State Forest Lands – Colleen Matula, DNR Forest Ecologist

The state forests are intended to provide leadership in sustainable forest management. Control of invasive species is an issue identified in the Forestry Statewide Plan indicating that our cooperators and citizens are looking for leadership in this area. Recognizing this need, the Division of Forestry has received funding via the biennial budget for inventorying invasive non-native plants on the northern State Forests (NHAL, Brule, Flambeau, Gov. Knowles, Peshtigo, and Black River).

Currently we are gathering background information on each forest and hiring ecologists to start the field inventory season in April 2006. Forests have sent information on areas they regard as priority, generally including trails, campgrounds, forest roads, gravel pits, and areas recently disturbed by equipment. We also wish to survey a sample of areas where timber harvest was conducted 2-5 years ago, looking particularly at landings and haul roads. We are requesting that all data be collected in a standardized format and consistent with other statewide surveys, which basically documents locations, species, and sizes of infestations. We

also want GPS polygons for areas surveyed, and areas infested with invasive plants.

In cursory surveys on the Brule River State Forest some invasive, nonnative plant species have been identified such as common and glossy buckthorn, purple loosestrife, phragmites, reed canary grass and Asian honeysuckle to name a few. Some of these sites are impacting forest regeneration and the surrounding habitat for a variety of species. Assessing the extent of the invasive species problem is the first step in this process. After

the first year of inventory, each forest will develop a strategic plan on how to address invasive plant species on the forest. Property level plans can focus efforts on areas where the greatest benefits can be achieved. Ongoing monitoring will be needed to determine whether controls are effective and whether invasive are arriving in new locations. In the future control, prevention and education will also be included in this effort. For more information on the inventory contact Colleen Matula at colleen.matula@dnr.state.wi.us.



Asian Honeysuckle in fruit



Family Fun Day

On June 4, 2005, the Brule Fish Hatchery and Brule River State Forest held our third annual Family Fun Day. Activities included hatchery tours, fly tying, fly casting, fish printing, fish filleting demonstration, turkey calling demonstration, forestry techniques, electrofishing demonstration, and canoe trips on the Brule River. It was a big success with about 200 people in attendance. We were assisted by 22 volunteers from the Brule River Sportsman's Club, Trout Unlimited, 4-H, Brule River State Forest, Fisheries Management, and the Society of American Foresters.



Highway 27 Reconstruction Projects

In 2006 The Department of Transportation will grade and realign highway 27 from Rush Lake Rd. to Radio Station Rd. (2 miles). The highway will also be pulverized and resurfaced from Radio Station Rd. to the Bayfield County line. (7 miles). Realignment will move the highway slightly east into the hillside (the old gravel pit) near the road into Cedar Island.

In 2007 the project will begin at the intersection of CTH B (Winnebougou) and extend north to the intersection of USH 2 in Brule. The project will be a recondition of STH 27 and consists of revising the intersection at CTH B to improve safety and driver visibility. The remainder of the project will pulverize the existing pavement for approximately 50% of its length and provide a new top layer of asphalt.

The remaining 50% will adjust the grade and create a new road from the foundation up. The new highway will remain essentially where it is now with some adjustments to smooth the curves improving visibility and driver safety. The new road will be paved 30' wide with an additional 3' shoulder.

The project is expected to last most of the summer, beginning sometime in May and ending in October or November. The road will be open to local traffic during construction but through traffic will be detoured.

Hogs Gone Wild near Brule!

Feral pigs (*Sus scrofa*), also known as wild pigs, wild hogs, wild boars, European wild boars, Russian wild boars, or razorbacks, are rangy-looking non-native members of the domestic swine family, *Suidae*. These transplants native to Europe and Asia are aggressive mammals posing serious ecological, economic, aesthetic, medical and veterinary threats. Feral pigs have recently been sighted Northern Douglas County townships of Brule, Maple, Cloverland, and Lakeside.

These feral members of the pig family should not be confused with the collared peccary, or javelina (*Tayassu tajacu*), the only native pig-like animal (Family *Dicotylidae*) living in brushy deserts, rocky canyons, scrub oak forests and arid mountain foothills of southern Texas, southern Arizona and southern New Mexico.

Feral pigs look very similar to the domestic pig. They are medium-sized hoofed mammals with a long, pointed head and stocky build. Males and females look much alike. Wild hogs exhibit great variation in color and size. The average wild sow weighs about 110 pounds (ranging from 77 to 330 pounds) and the average wild boar weighs 130 pounds (ranging from 130 to 440 pounds). Their hair is coarse with long bristles (coarser, denser and longer than that of a domestic pig). Colors and patterns range from



solid black, gray, brown, blonde, white, or red to spotted and belted combinations of these colors. Most common color is black. Adults develop a thick, bristly mane tipped with blonde.

Feral pigs have elongated, flexible, tough, flattened

snouts. Their pointed ears stand erect, about four to five inches above their head. Their moderately long tails are sparsely haired, straight and never coiled like the tail of a domestic pig. They have four cloven feet, similar in appearance to a deer's hooves. Boars have four continually growing tusks that can be extremely sharp. Both the upper and lower tusks are usually 3 to 5 inches long and turn out and curve back toward the eyes. The boars use their

tusks for defense and to establish a dominance hierarchy during breeding. Due to the injuries inflicted by these tusks, boars have also developed a thick, tough skin of cartilage and scar tissue around their shoulders.

Tracks of feral pigs look similar to deer tracks, although the overall shape of a feral pig's track is rounder and less heart-shaped than that of a white-tailed deer. Pig tracks also tend to be relatively shorter (about 2 1/2 inches long), more splayed and more blunt at the tip than deer tracks. The front dewclaws, in soft soil, leave crescent shaped prints outside and behind the larger hoofs. The hind dewclaw prints, if present, look like dots.

Rooting is another common sign used to identify feral pig activity. These areas can be large, covering an entire field. In soft soils, rooting can be three feet deep.

Wallows are fairly sure signs of feral pig activity in wet soils. Feral pigs make these wallows to escape heat and insects mostly in the hot summer months.

Feral pigs also rub on a variety of objects to scratch themselves or to remove dried mud or parasites from their skin. They rub on trees, rocks, fence posts and power poles from ground level up to about 3 feet high, usually with bits of hair or mud clinging to the rubbed object.

The home territory of a feral pig covers an area about 10 square miles or less. They nest and rest in dense vegetation and secluded thickets. Their nests and beds are small, grass-lined hollows made of piles of grass and twigs. A feral pig has a very strong sense of smell. It uses its tough, flexible nose to sniff out roots, tubers, and small animals living underground. Pigs also have a good sense of hearing, but a





and other fruits, roots and tubers, corn and other agricultural crops, insects, crayfish, frogs, salamanders, snakes, mice, eggs of ground-nesting birds, young rabbits, fawns and young livestock, such as lambs, calves, kids. They can also kill larger livestock that are weak from illness or injury and readily scavenge carrion. Pigs especially relish acorns in the fall. Pigs feed most heavily at dawn and dusk, spending the majority of the day either

poor sense of eyesight. Feral pigs communicate with each other by grunting and squealing, similar to their domestic relatives. These hoofed mammals can run up to 30 miles per hour and are good swimmers. Feral pigs live from about 15 to 25 years. Boars usually lead solitary lives, though several may band together. Sows forage with their young, usually about six in a family group. Several family groups may join in groups of 50 or more individuals.

Generally feral pigs mate during two peak breeding seasons: one in winter (December through February) and another in early summer but can mate any time of the year. If a sow is not bred during the two or three days she is in estrus (in heat), she will become receptive again 21 days later. Boars travel between family groups in search of receptive sows and fight for dominance by slashing their sharp tusks at a rival's shoulders. In northern portions of their range sows usually produce 2 litters per year consisting of 4-8 piglets per litter. After a 115-day gestation period, sows give birth to piglets that weigh one to two pounds. Piglets are able to follow their mother around after one week and are weaned in about three months. Pigs reach sexual maturity by a year and half, reach adult stature within three years and are fully-grown in five to six years.

Unlike some other hoofed animals, the feral pig has a simple stomach and does not chew cud. Feral pigs are opportunistic omnivores that eat whatever plants or animals happen their way. They eat forbs, grasses, leaves, berries

wallowing in mud holes or resting in dense vegetation.

Due to feral pigs' tramping and rooting behaviors, wildlife biologists are becoming increasingly concerned about the devastation these exotic animals can cause to ecologically sensitive habitats, particularly native plants and rare, threatened or endangered species. Farmers are especially worried about the potential spread of exotic diseases to their domestic livestock. Of primary concern are diseases such as trichinosis, pseudorabies, brucellosis and tuberculosis. Feral pigs can be extremely destructive to recently planted fields and can damage pastures and fences, resulting in serious financial losses. Wallows can affect ponds and wetlands by muddying the water, creating algae blooms, destroying aquatic vegetation and lowering overall water quality. Digging and rooting activity of feral pigs near a watercourse leads to bank erosion.



Evaluation of Water Quality in the Bois Brule River System, Douglas County, using Aquatic Macroinvertebrates: Spring 2005.

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INTRODUCTION

The water quality of the Bois Brule River System was evaluated using aquatic macroinvertebrates in 1983-1984 and again in 2001-2002 (DuBois 2002). In addition, DuBois (1993) sampled the aquatic macroinvertebrates throughout this system in 1983-1988 in order to develop a preliminary baseline list of species. DuBois (2002) reported elevated biotic index values in 2001-2002 for several sites within the system, compared to values obtained in 1983-1984. The current study is in response to the recommendation presented by DuBois (2002) that the system be sampled again in 2005, three years after his study, in order to document if these elevated biotic index values persist.

METHODS

The sampling methodology in the current study followed those originally described by Hilsenhoff (1982, 1987) and used by DuBois (2002). The max-10 procedure outlined in Hilsenhoff (1998) and used by DuBois (2002) was also included for the calculation of the index values in the current study. This procedure limits the number of specimens to 10 for any given taxon in a sample, which prevents a single, dominant taxon from providing too much influence on the calculation of the HBI.

Data on the sample sites, dates, number of replicate samples, and collectors are presented in Table 1. The collectors include the author, along with two undergraduate student assistants. Where three collectors were present, each collected one of the three replicates at a site.

Table 1.

Stream/Location	Date Sampled (2005)	No. of Reps	Collector(s)
Brule R. @ Lamprey Barrier	June 24	3	Schmude
Brule R. @ County FF	May 27	3	Schmude
Brule R. @ mouth of Nebagamom Creek	May 26	3	Schmude, Kent, Leiffring
Brule R. @ Winneboujou Boat Landing	May 26	3	Schmude, Kent, Leiffring
Brule R. @ Cedar Island/Hungary Run	May 26	3	Schmude, Kent, Leiffring
Little Brule R. below Fish Hatchery	May 26	2	Schmude, Kent, Leiffring
Little Brule R. below Fish Hatchery	June 28	3	Schmude
Little Brule R. @ Dennis Road	May 26	2	Schmude, Kent, Leiffring
Little Brule R. @ Dennis Road	June 28	3	Schmude
Nebagamom Creek @ lake outflow	May 26	3	Schmude, Kent, Leiffring
East Fork Brule River	May 26	3	Schmude, Kent, Leiffring
Wilson Creek @ County P	May 26	3	Schmude, Kent, Leiffring

An attempt was made to collect all of the samples on May 26-27, but the gate to the lamprey barrier was locked on the second day, and access to the sample site was not achieved. Subsequently, a major storm event occurred and the water level on the river was too high to permit safe sampling. Due to scheduling difficulties, the site at the lamprey barrier could not be sampled until June 24.

An error in the laboratory resulted in the loss of one replicate sample each from the Little Brule River below the Brule Fish Hatchery and at Dennis Road. Consequently, a second field trip was conducted on June 28 to collect three replicate samples from these two sites.

Data were analyzed using the Hilsenhoff Biotic Index (HBI) (Hilsenhoff 1982, 1987, 1998) and by determining the EPT (Ephemeroptera-Plecoptera-Trichoptera) richness values for each site. Table 2 lists the seven water quality categories for the HBI.

Table 2.

Biotic Index Value	Water Quality	Degree of Organic Pollution
0.00 – 3.50	Excellent	No apparent organic pollution
3.51 – 4.50	Very Good	Possible slight organic pollution
4.51 – 5.50	Good	Some organic pollution
5.51 – 6.50	Fair	Fairly significant organic pollution
6.51 – 7.50	Fairly Poor	Significant organic pollution
7.51 – 8.50	Poor	Very significant organic pollution
8.51 – 10.00	Very Poor	Severe organic pollution

RESULTS and DISCUSSION

Table 3 provides the data obtained by DuBois (2002) and for the current study. All of the HBI values represent the modified HBI that is called max-10 (Hilsenhoff 1998).

Table 3. (number of replicates in parentheses; ns = no sample)

Mainstem	Chironomidae Excluded			Chironomidae Included	
	1983-84	2001-02	2005	2001-02	2005
Below lamprey barrier	1.38 (3)	ns	2.46 (3)	ns	3.59 (3)
Co. Hwy FF	1.07 (4)	1.16 (2)	1.98 (3)	1.16 (2)	2.59 (3)
Mouth Nebagamon Cr.	ns	1.17 (2)	2.97 (3)	1.25 (2)	4.65 (3)
Winneboujou	1.66 (6)	2.17 (2)	1.98 (3)	2.76 (2)	3.41 (3)
Cedar Is./Hungary Run	ns	2.63 (4)	2.39 (3)	3.47 (4)	3.00 (3)
<u>Tributaries</u>					
Little Brule, Dennis Rd.	2.68	ns	(May 26) 2.80 (2)	ns	(May 26) 4.59 (2)
			(June 28) 3.96 (3)		(June 28) 4.69 (3)
Little Brule, below hatchery	ns	4.48 (2)	(May 26) 2.81 (2)	5.18 (2)	(May 26) 3.78 (2)
			(June 28) 4.18 (3)		(June 28) 4.83 (3)
Nebagamon Cr. near lake	ns	3.93 (2)	3.80 (3)	4.49 (2)	4.03 (3)
Wilson Cr.	1.97 (3)	2.81 (2)	0.54 (3)	2.85 (2)	1.83 (3)
East Fork Brule R.	ns	ns	1.82 (3)	ns	2.84 (3)

On the mainstem of the Brule River, HBI values showed an increase at four of the five sites in 2005 compared to the previous time periods (except for Winneboujou – chironomids excluded). The only exception was at Cedar Island/Hungry Run where values decreased. When samples were collected below the lamprey barrier on June 24, 2005, it was observed that the water was turbid and stringy green algae was present on the substrates. In addition, the surroundings smelled like “rotten” fish. Water quality was estimated to be “fair” to “good” based on these observations, and I was surprised to determine the water quality as “very good” to “excellent.” No other sites along the mainstem of the Brule River showed overt signs of organic enrichment like those found at the lamprey barrier.

The HBI values for the tributaries decreased for the Little Brule River below the fish hatchery (both dates), Nebagamon Creek, and Wilson Creek. Values increased slightly for the Little Brule River at Dennis Road compared to 1983-84. No data are available for the East Fork of the Brule River before 2005; water quality was excellent with a very low HBI value (1.82). The site on Nebagamon Creek below the lake outlet was dominated by black fly larvae of the genus *Cnephia*, which has a tolerance value of 0. Most other genera/species of black flies have higher tolerance values. I believe a value of 0 for *Cnephia* is likely an underestimate and that these larvae can tolerate greater amounts of organic pollution. If *Cnephia* had a greater tolerance value, the HBI value for Nebagamon Creek would be higher, perhaps much higher. I estimated the water quality to be “fairly poor” to “fair” based on the observations of high densities of black flies and other tolerant species of aquatic invertebrates, and I was surprised to calculate a “very good” water quality category for this site.

Both sites on the Little Brule River were sampled twice, in late May and one month later in June. HBI values increased from May to June, which illustrates that variation due to season can occur when monitoring water quality. It is important to attempt to control this variable when comparing data from year to year by sampling on the same date, or more importantly, by sampling after the same amount of degree days have accumulated from the beginning of the season. Aquatic insects are known to synchronize their life cycles based on photoperiod and degree-day accumulations. The reports by DuBois (1993, 2002) did not make it clear when the samples were collected during the respective years. This makes it more difficult to interpret differences in the HBI values between years for this study. In addition, a more detailed comparison of the data (taxa and abundances) between years would be necessary to provide a more meaningful comparison of the current HBI values with those provided by DuBois. Data from DuBois (2002) were not available for this report.

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Brule River Water Chemistry Measurements During and Following the 8 inch Rainfall of October 4-6, 2005

By Bill Gobin and Bill Blust – WI DNR

Background:

Trout need a balance of chemicals in the water in order to survive. The following concentrations or measurements are critical for survival of trout.

Dissolved Oxygen - concentrations of 5 parts per million is the minimum concentration for trout.

Nitrogen saturation – Nitrogen is the most abundant element in air and in water. It can displace oxygen in water. Nitrogen over-saturation can be detrimental to fish, in order for them to remove it from their blood it must come out through the gills, this can cause bubbles in the gill tissue and even damage the gill filaments by bursting. Nitrogen saturation levels for trout should be at 100 parts per million or less.

pH – this is the measurement of the hydrogen ion in water, it measures the acidity or alkalinity of the water. pH is measured on a scale of 1 to 10, with 1 to 6 being acidic, 7 neutral, 8 to 10 are basic. Trout can adjust to whatever the water pH is in their native streams but fluctuations in this level can be hard on them. In the Brule the normal pH is around 6 to 7.

Measurements of these concentrations change with any change in environmental conditions, normally these changes are small increases or decreases that fish can handle easily. During adverse weather conditions these conditions change more rapidly and can cause fish to stress, be forced from an area or even die. Such conditions can be; rapid snowmelt, heavy and rapid rainfall, and drought conditions. During snowmelt and heavy rains, decaying vegetation and stagnant water are flooded into the river and aid in the change. Water temperatures affect these changes also, oxygen is less soluble in warm water than in cold. When there is less oxygen in solution, there can be more nitrogen in solution.

We measure the dissolved oxygen using a dissolved oxygen meter. We measure the pH using a meter or a test strip that changes color. We measure the nitrogen saturation using the dissolved oxygen meter and a satumeter along with some complicated mathematical formulas.

During the heavy rains of October 4-6 2005, DNR personnel at the Brule Hatchery began to measure the Oxygen (DO), Nitrogen (N) and pH of the incoming hatchery water from the Little Brule River. We observed the following measurements:

	DO	Temp.	pH	Nitrogen
Normal	10 or 11	50 °F	6.8 to 7	102
10/5/05	8.54	52 °F	5.8	107.1
10/6/05	10.54	47.6 °F	6.0	105.3

Bill Blust from DNR fisheries in Superior also took measurements on the main Brule River in areas where during the 2001 flooding he saw what appeared to be stressed fish. He observed the following measurements:

	DO	Temp.	pH	Nitrogen
Stones Bridge 10/5/05	6.23	53 °F	5.5	109.6
Stones bridge 10/6/05	3.75	50.5 °F	6	113.3
Winnibijou 10/6/05	7.3	49	unk	108.5
Hwy P 10/6/05	4.88	48	unk	111.1
Wilson @ Stone Chimney	7.2	50	unk	108.6
E. Fork 10/6/05	8.67	45	unk	108.7
Castle Bridge 10/6/05	6.48	49.6	unk	108.8
Wheaton's rapids 10/6/05	5.62	49.6	unk	110.1
Blueberry @ Bellwood	8.67	49.8	unk	108.1
Stones Bridge 10/7/05	4.39	47.5	unk	109.3

During this rainfall event, at the hatchery we noted that fish were stressed, especially brook and rainbow trout. Fish were jumping out of the water and crowding the screens in the rearing areas. We did not have any fish die but they were definitely stressed. On the main Brule we can see from the measurements that the conditions were worse. Nitrogen levels were high and Oxygen levels were low almost to the dangerous level. Our State fish health specialist also tells me that at pH levels below 5.5 fish have trouble absorbing oxygen through their gills. All of these environmental changes occurred over a very short amount of time during this rainfall event. Fish were most likely stressed in the main Brule also, but in the main river, fish can move out of an area of high stress into areas where the environmental effects are limited. The tributaries and areas of the river below tributaries were not as affected by the nitrogen and pH changes as areas such as Stone's Bridge were. We also know that there is not much that we can do to mitigate these changes, if this event had happened over the summer, the results could have been worse with even warmer water and more decaying vegetation in the water.

Summary of early succession forest bird surveys in Northwest Wisconsin, 2005

Karl Martin, Research Scientist, Wisconsin DNR

We conducted a preliminary assessment of habitat use and abundance of bird species of concern breeding in early succession forest in Northwest Wisconsin. This is part of a larger statewide effort to assess the abundance and habitat use of species association with early seral forested habitat.

Surveys were conducted from 6 June – 11 June 2005 by Aaron Wright, Adam Tlachac, and Mike Worland. We surveyed 12 stands with 6 – 10 survey stations per stand for a total of 104 survey stations. We conducted a 10 minute, 100 m radius point-count at each station. We also recorded dominant shrubs, trees, and assessed vegetation structure at each station.

Focus species were Golden-winged Warbler, Blue-winged Warbler, Mourning Warbler, Veery, Black-billed Cuckoo, and Yellow-billed Cuckoo. These species are of high conservation concern according to Partners In Flight, and have declining populations according to the Breeding Bird Survey.

We surveyed the following cover types:

Jack Pine: Dominated by young jack pine (< 5 m)

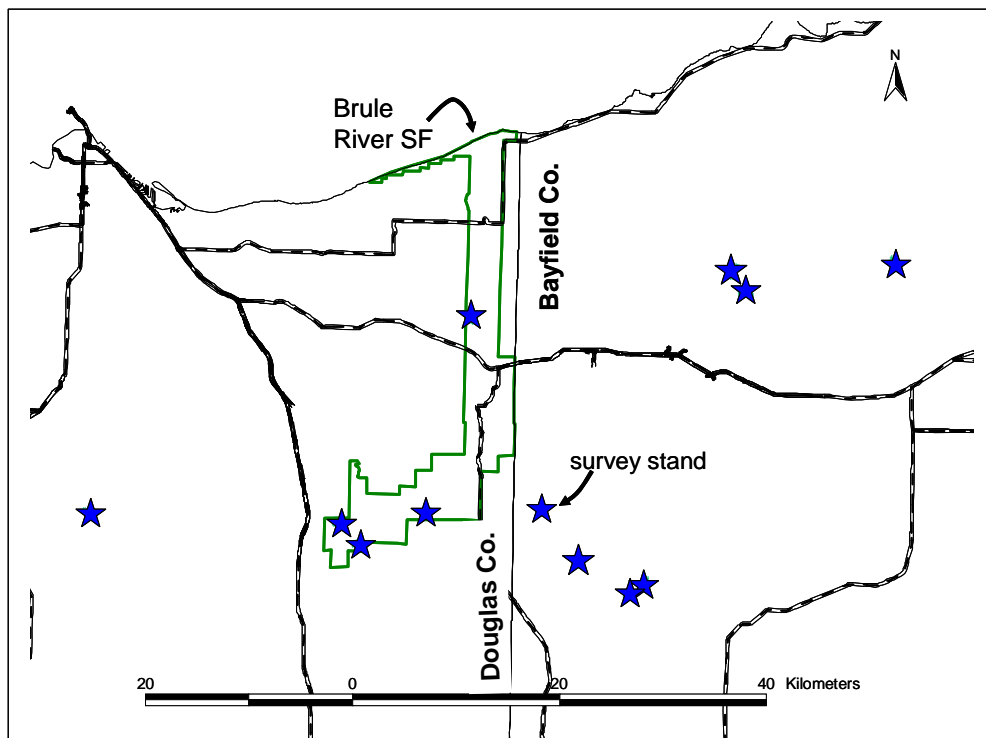
Aspen: Dominated by young aspen (< 5 m)

Upland Brush: Young, mostly dry, and dominated by species other than aspen or jack pine (usually red oak, cherry, or hazel).

Swamp Edge: Brushy edge between shrub swamp and upland forest, usually dominated by aspen.

Shrub Swamp: Dominated by alder, willow, and other wetland species.

Study area:



Results for Golden-winged Warblers, Mourning Warblers, and Veerys, by cover type:

	stands/stations	GWWA count	GWWA density ¹	MOWA count	MOWA density	VEER count	VEER density
aspen	2 / 16	5	0.33	11	0.75	8	0.52
jack pine	1 / 9	0	0	0	0	0	0
shrub swamp	1 / 10	7	0.70	0	0	15	1.50
swamp edge	2 / 15	6	0.42	4	0.33	9	0.67
upland brush	6 / 54	15	0.29	4	0.07	12	0.22
overall	12 / 104	33	0.32	19	0.22	44	0.43

¹ Individuals per survey station

Results by stand:

survey date	site	ownership	compartment/stand or legal	recon cover type	survey cover type	stations	count			#/station		
							gwwa	veer	mowa	gwwa	veer	mowa
06/08/05	br_a2	Brule SF	8/11, 8/1, 8/7	A (blowdown regen)	aspen	7	3	5	8	0.43	0.71	1.14
06/11/05	br_jp17	CNNF	171/5,14,19	PJ (98-99)	aspen	9	2	3	2	0.22	0.33	0.22
06/08/05	br_jp5	Bayfield Co.	143/3	PJ (2000)	jackpine	9	0	0	0	0	0	0
06/09/05	br_a1	Douglas Co.	T46, R14, S35	LBA	shrubswamp	10	7	15	0	0.7	1.5	0
06/07/05	br_se1	Brule SF	9/2, 9/11, 11/3, 11/8	LBA, UB, & A (1988)	swamp edge	6	3	6	4	0.5	1	0.67
06/06/05	br_se2	Brule SF	57/6	A (1971) & LBA	swamp edge	9	3	3	0	0.33	0.33	0
06/06/05	br_jp1	Brule SF	22/1	PJ (1994)	upland brush	9	0	1	0	0	0.11	0
06/07/05	br_jp11	CNNF	64/12,20	PJ (93-99)	upland brush	7	5	0	0	0.71	0	0
06/11/05	br_jp13	CNNF	164/2	PJ (1993)	upland brush	9	0	4	0	0	0.44	0
06/07/05	br_jp9	CNNF	65/7	PJ (1998)	upland brush	10	8	1	2	0.8	0.1	0.2
06/09/05	br_ub3	industry	T45, R9, S14,15	-	upland brush	10	2	0	1	0.2	0	0.1
06/10/05	br_ub7	CNNF	226/9, 228/7	NF-upland	upland brush	9	0	5	0	0	0.56	0

Five stands identified as jack pine in the recon data only had a minor jack pine component when we visited them for surveys. Four were more like upland brush, with a mix of deciduous trees and shrubs, and one was dominated by aspen.

Young aspen stands and shrub swamps large enough to survey (> 80 ac.) were uncommon in this area. For future surveys the survey area should be expanded to include more of the swamps to the west and east. Shrub swamp had the highest density of both Golden-winged Warblers and Veerys, but this was based on only one stand. For Veerys, this finding was confirmed in our larger survey effort in north-central WI, where they reached their highest density in shrub swamp. But Golden-wings reached their highest density in aspen in north-central WI—about twice their density in shrub swamp.

Aside from the high density of Golden-wings in the shrub swamp stand, there was no significant difference in Golden-winged density among aspen, swamp edge, and upland brush cover types. Golden-winged densities among upland brush stands were particularly variable, with two stands having a density as high or higher than the shrub swamp stand, while the other 4 upland brush stands had Golden-winged densities at or near zero. The difference in vegetation characteristics between high-density upland brush stands and low-density upland brush stands was not apparent with our quick vegetation assessments.

Stands dominated by jack pine and lacking a significant deciduous component were not used by any of these focus species. This was confirmed by surveys in other parts of the state. However, jack pine is important for other high-priority species, including Spruce Grouse and Connecticut Warblers.

Areas undergoing barrens/Sharp-tailed Grouse management—including Moquaw Barrens and Bayfield Co. Forest—generally supported vegetation too short and sparse for these species. However, we surveyed the

brushiest area we could find in the Moquah Barrens. This site supported a 5 – 15 ft. high mix of deciduous brush. No Golden-wingeds were found here, but there was a surprisingly high density of Veerys.

Mourning Warblers reached their highest density in young aspen, which agrees with our findings in north-central WI. They were uncommon or absent in the other types.

No Blue-winged Warblers or Yellow-billed Cuckoos were detected. We did not expect to find Blue-winged Warblers here, though they currently breed in central Wisconsin and their range is expanding northward. Yellow-billed Cuckoos are uncommon in northern Wisconsin. Two Black-billed Cuckoos were detected, but both were outside of the 100 m radius for the survey stations, so we did not include them in the data.

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Firewood as a Mode of Transport for the Emerald Ash Borer: Management Options

October 26, 2005

Jane Cummings Carlson, Wisconsin DNR

Background

Emerald ash borer (EAB) (*Agrilus planipennis*) is a bright green, metallic woodborer in the family Buprestidae. EAB was first detected in southeast Michigan in 2002, but evidence suggests it has been in Michigan since the mid-1990's. Native to Asia, EAB has infested over 15 million native ash trees in southeast Michigan. By 2005 workers had detected EAB in Windsor, Ontario, Indiana, Ohio, Maryland and Virginia.

Infested trees are killed by feeding activities of the larval stage. All ash species native to Wisconsin can serve as host material. These include *Fraxinus americana* (White ash), *F. nigra* (Black ash), and *F. pennsylvanica* (red or green ash). The life cycle of *Agrilus planipennis* usually spans one year with an overwintering larval stage. However, in colder regions this beetle may overwinter two seasons in the larval stage before completing development. Adults emerge between mid-May and late June and initiate maturation feeding on the leaves of host trees. Adults are attracted to light and warmth and are very active on sunny, calm days.

Flight dispersal is generally reported to be within .5 miles of emergence areas. Mating occurs 7 to 10 days after emergence; oviposition begins 7 to 9 days after mating. Eggs are laid singly on the sunny side of the tree trunk in bark crevasses or thick branches. Each female may lay 68 to 90 eggs (average 76.6 eggs). Adult females live about 21.6 days whereas males live only about 13 days. Eggs hatch in 7 to 9 days. After hatching, first-instar larvae initially bore through the bark to feed on the phloem and eventually feed on the outer surface of the sapwood as they grow. As they feed growing larvae form tunnels that are flat and wide, and serpentine. Larvae overwinter one or two seasons and pupate in the spring at the end of a tunnel near the surface of the sapwood. Adults bore a D-shaped exit hole in the bark and begin emergence in early June.

Since 2002, APHIS, States, and city cooperators in all affected states, in conjunction with the USDA Forest Service, have undertaken eradication activities by conducting surveys, imposing quarantines, and removing three infested trees. To date, in excess of 290,000 trees have been removed in Indiana, Maryland, Michigan, Ohio, Virginia, and Canada. The USDA Forest Service has worked with State Foresters and city officials to help replace trees removed through EAB program activities.

Wisconsin's forests contain approximately 717 million ash trees (415 million black ash, 144 million white ash, and 158 million green ash) that are > 1" in diameter.¹ Ash is present in 3 timber types: Elm/Ash/Soft Maple, Northern Hardwood and Oak/Hickory. Accurate data on the number of ash trees in Wisconsin's urban forests is not available yet it is known that ash is the second most common species in our urban forests.

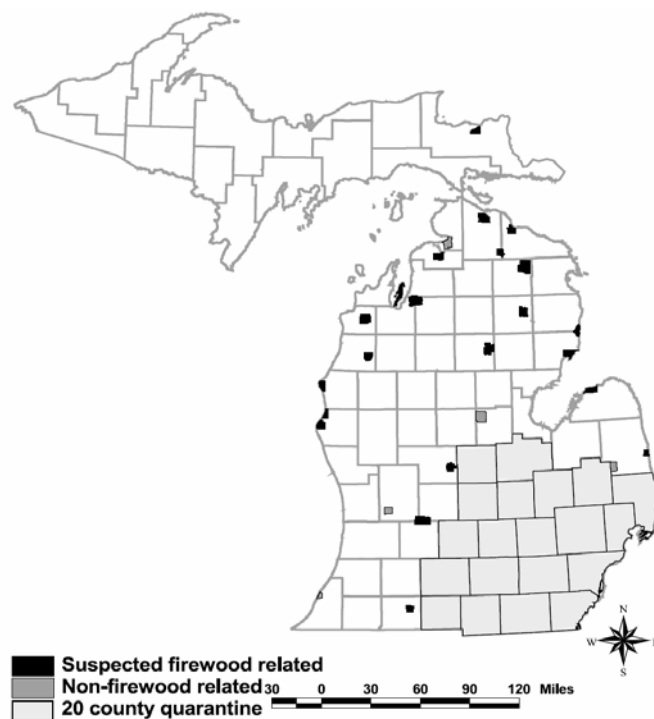
¹Miles, Patrick D. Sep-13-2005. Forest inventory mapmaker web-application version 2.1. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station.

Firewood as a Vector for EAB

Data regarding movement of EAB from core infestation areas shows that infested ash firewood is serving as a primary vector for the movement of this organism (Figure 1). The long period of time EAB spends in the larval stage in dead and dying ash creates a highly hazardous situation for the state of Wisconsin. Data from the Reserve American program shows that visitors from Michigan's EAB quarantined areas commonly camp at Wisconsin's state parks (Table 1). Michigan's quarantine currently restricts the movement of firewood out of quarantined areas yet firewood continues to move this insect. Wisconsin currently has no restrictions on the movement of firewood. Wisconsin's public information efforts in 2005 have focused on the "Bring it Burn it" message, which educates campers on the dangers of transporting firewood and the importance of burning whatever all of the firewood transported before leaving the campsite.

In September, 2005. EAB was detected in a trap tree in Brimley State Park on the northeastern end of the Upper Peninsula of Michigan. Yet another suspected movement through firewood, this find is a significant distance from previously reported infestations and sounds an alarm for the State of Wisconsin

Figure 1. Locations of EAB infestations suspected of being initiated by the movement of infested firewood.

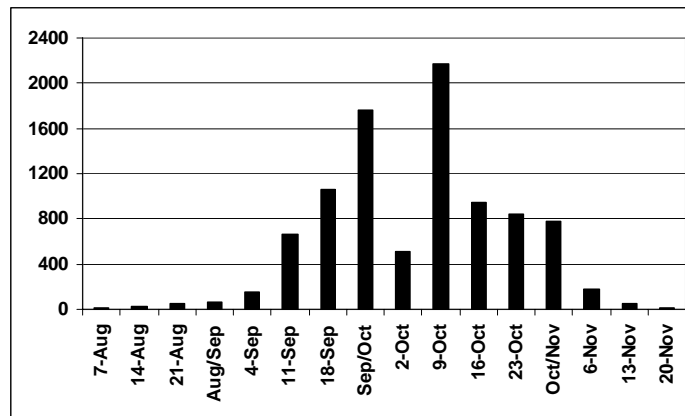


2005 BRULE RIVER FALL FISHWAY UPDATE

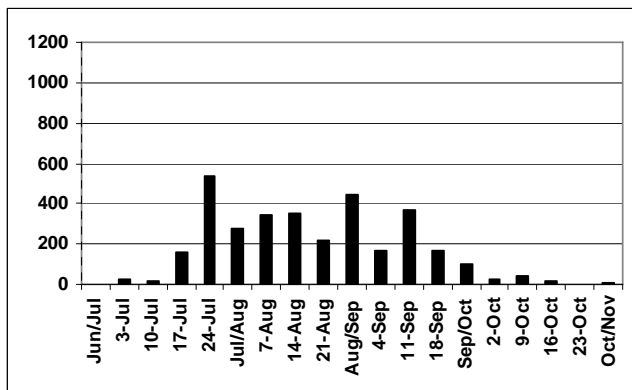
A total of 15937 trout and salmon were counted as they migrated upstream through the lamprey barrier/fishway from June 26th through November 23rd. The steelhead population remains very healthy with the fall portion of the run comprised of 9260 fish and peak movement occurring during the week of October 9th. Recruitment from the “2003” year class appears to be exceptional with about 1900 three year old jacks migrating. The brown trout run of 3265 was spread out from late July through mid September due to low clear river conditions. This smaller than average run was still negatively influenced by poor fry survival due to the record flood in the spring of “2001”. A total of 3205 coho ascended, with the last week of September being the peak week. This number is very comparable to the “2002” run which produced this year class. Additionally, chinook numbers remain low with 161 passing by the observation window. Other salmonids counted included 45 pink salmon and one coastal brook trout. A very large rainfall event on October 4th and 5th significantly changed river conditions from an extended period of low and clear water to extremely high and muddy, which resulted in stained water conditions for the remainder of the season. Lake Superior conditions were evidently very favorable the past two summers as growth and possibly survival rates were above average. Warm summer temperatures and two lake herring year classes in 2003 and 2004 were likely major contributing factors.

Year	Brown Trout	Chinook Salmon	Coho Salmon	Steelhead Fall	Steelhead Spring	Steelhead Total	Estimated Stocked Steelhead
2002-03	4425	271	3249	7448	2035	9483	1985
2003-04	3871	113	1087	8251	1997	10248	2026
2004-05	2941	146	1001	7635	1445	9080	1698
2005-06	3265	161	3205	9260	- - -	- - -	1270

STEELHEAD



BROWN



COHO

